

JOURNAL OF ADVANCED MILITARY STUDIES

JAMS

Vol. 15, No. 1, 2024



JOURNAL OF ADVANCED MILITARY STUDIES

JAMS

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Published by Marine Corps University Press
2044 Broadway Street | Quantico, VA 22134

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Journal of Advanced Military Studies

(Print) ISSN 2770-2596

(Online) ISSN 2770-260X

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The journal is indexed by ProjectMUSE, Scopus, ScienceOpen, EBSCO, ProQuest, Elsevier, OCLC ArticleFirst, Defense Technical Information Center, Journal Seek, IBZ Online, British Library System, Lancaster Index to Defense and International Security Literature, and AU Library Index to Military Periodicals.

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Characterizing Future Authoritarian Governance in the Space Domain

Julian G. Waller, PhD

Abstract: Traditionally, discussions of governance beyond Earth have largely been held to the purview of debates about space law and global governance regimes. Yet, the priority of space exploration among ambitious, tech-industry associated billionaires and its continued potential for militarization suggest that a more dynamic approach may be needed, given that state-sponsorship of extraterrestrial colonial projects may be more akin to partnerships between private and public actors rather than nation-states assuming traditional roles as sole sources of decision-making. Permanent settlements in space will require forms of localized government that may look distinct from contemporary models of political order. This article thus asks a provocative question associated with the empirical record of human colonization and settlement in prior eras: What sort of authoritarian governance is most likely to form in human space settlements during the medium term? Reviewing variations on political order in small-scale colonial settlements in light of recent conceptual work on authoritarian rule, the article identifies three theoretical models of governance that may emerge once beyond Earth settlements become permanent fixtures of human society. **Keywords:** space governance, authoritarianism, political order, corporate space-faring

Introduction¹

What will political order look like beyond the terrestrial domain during the course of the twenty-first century? Recent space-faring achievements by billionaires Richard Branson and Jeff Bezos beginning in the early 2020s, as well as the continued transition from government-led to private space flight, have captured the imaginations of policymakers, research-

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Journal of Advanced Military Studies vol. 15, no. 1

Spring 2024

www.usmcu.edu/mcupress

<https://doi.org/10.21140/mcu.j.20241501007>

ers, and interested observers alike.² With NASA's stated mission to return to manned spaceflight, with the recent establishment of a U.S. military Service dedicated to the space domain, and with American billionaires such as Bezos and Elon Musk proposing permanent colonies in satellite orbit, on the lunar surface, and on Mars, questions of extraterrestrial governance are already arising across commentary, policy-practitioner, and scholarly communities, both in serious and more whimsical forms.³ This issue-set is not limited to a focus on private or civilian actors but also importantly encompasses military and national-security concerns as well, given the recent institutionalization of a new U.S. Space Force under the Donald J. Trump administration and its continued development since its 2019 founding.⁴

Contemporary scholarly discussions of governance beyond Earth have often remained confined to the purview of important debates about space law, global legal regimes, and more recently speculative economics.⁵ Yet, the oversized personality of figures such as Musk and the clear trend toward a *de facto* "oligarchization" of near-Earth space settlement provides new room for a greater variety of speculative questions to be taken seriously.⁶ Musk, for example, has recently termed himself a "technoking," per the governing corporate documents of Tesla, which in a flippant way gestures evocatively toward some of the genuine, medium-term possibilities of what social life and political order in space may look like beyond the direct writ of terrestrial nation-states.⁷

While the 1967 Outer Space Treaty (OST) and its related General Assembly resolutions prohibit national appropriation by claims of sovereignty in extraterrestrial environs, scholars have increasingly noted the complication of nongovernmental actors in space, their likely significant future economic role, and the hybrid nature of government funding interacting with private ownership and contracting in the space domain that will be especially relevant for future manned and permanent installations.⁸ To explore the shifting dynamic surrounding the renewed growth in beyond Earth investments, approaches, and interests, this article makes the partial assumption that corporations are as likely as not to be the driving organizational force for the medium term of future space colonization. These efforts may quite possibly be funded by governments and perhaps be restrained by a new OST or agreed on governance regulations, of course, although the argument presented here also works similarly in a world of more direct government control over future settlements instead.

A growing social scientific academic literature is now more fully emerging that seeks to tackle long-term questions regarding "space civilizations" and its potential social organization, yet what remains underemphasized is an approach relying on more medium-range, theoretically informed scholarship connected to the empirical patterns of real human governance models.⁹ That is, quite simply, taking head-on the question of what governance may look like as long-term extraterrestrial settlement becomes a more actionable reality.

To that end, this article explores the implications of a basic, yet often unmentioned assumption about a nascent future space politics, which will loom

ever larger as humanity approaches decades during which permanent space colonization will likely begin in earnest. Such permanent human settlements beyond Earth will require local governance structures that must align with a social environment in which exit is difficult and in which intentional, rigid organizational patterns are necessary for both mission execution and general survival. For this reason, contemporary forms of democratic government found in the West may be relatively unusual and hard to achieve in the space domain. That is, human societies beyond Earth, once they achieve a certain population size and sustainable long-term prospects, will inevitably be governed in some way—but how? This is a question relevant to a plethora of ongoing debates about the economics of space colonization, its militarization, and its increasing dominance by private actors. All suggest that researchers and policymakers need to be sober and serious about the governance question beyond the terrestrial sphere. Taking on this analytical challenge directly, it is important to ask an uncomfortable question: What sort of authoritarian governance might exist in human space settlements during the medium term, and how can previous studies and historical examples inform and enlighten us to such possibilities in the future?

The provocation here is completely serious, as authoritarian rule is far more likely to be the norm for extraterrestrial colonial ventures than anything else—a prospect this article addresses directly by way of a framework based in social science theory and the history of small-scale, colonial political regimes.¹⁰ Organizational theory posits a variety of forms for nonsovereign corporate entities, very few of which accord to standard democratic templates.¹¹ It is likely that the organization of space settlements on the small scales of tens to hundreds will operate similarly, and it is certainly reasonable to raise both the nature and prosaic practice of authoritarian governance as a serious potential that must be confronted by policymakers and queried by new scholarship on the subject.

Given this less than utopian likelihood, a corollary question presents itself as well: What sort of normative preferences should government policymakers, intergovernmental sponsors, and corporate decision-makers be cognizant of prioritizing—or even intentionally setting up—ahead of major space settlement missions? Although the question of extraterrestrial governance has often been posed in either a legal mode or as a trope of speculative fiction, lessons from comparative social science, political economy, organizational theory, and historical political studies are underutilized but well-placed to answer such issues in seriousness, especially as this new era becomes a reality.¹²

The argument briefly presented here is organized in three parts. The article first turns to the task of justifying the statement regarding likely authoritarian realities for political organization in permanent extraterrestrial settlement structures, making only modest assumptions about the size and self-sustainability of such communities over the medium term.¹³ It then suggests what the de facto authoritarian nature of such colonial ventures means for the small, space-

based polities that will eventually characterize the near-abroad of our terrestrial world. Following this discussion, the article details a set of plausible historically and theoretically informed institutional models as illustrative vignettes that are more likely than not to develop, either organically or with intention. Finally, the article concludes with several relevant takeaways for planners and policymakers as they confront the complications of this governance problem-set in extraterrestrial conditions.

Why “Authoritarianism”?

Why should policymakers assume authoritarianism for a future in which the solar system is dotted with human colonies and long-lived settlement ventures? If authoritarianism is conceptualized in the residual and non-normative sense common to contemporary social scientific research, as any sovereign or subsidiary political order that is not identifiably an electoral democracy, it is clear why this governance structure is very likely most applicable to thinking about extra-terrestrial governance.¹⁴ *Electoral democracy* is a system of government in which the apex leadership is chosen through a competitive struggle for the peoples’ vote under broad suffrage by way of competing parties (or individuals representing de facto factions) with uncertain outcomes.¹⁵ In organizational terms, the composition of the leadership hierarchy of democratic regimes is definitionally uncertain, subject to regular political pressures from a wide selectorate of the voting members of the body politic. That electorate is understood to be broad (usually placing theoretical political sovereignty at the level of the national community) and their views integrated into the political process through formal voting in competitive elections.¹⁶

An *authoritarian regime* is one in which the apex leadership is not chosen through such mechanisms, and is therefore institutionally unaccountable to electorates, either formally (as in monarchies, military juntas, or ideocratic party-states, for example) or in practice (as in “electoral authoritarian” regimes that hold unfair elections or electoral oligarchies or aristocracies that restrict political input along one or more key democratic criteria).¹⁷ As noted before, most corporate structures, as well as the leadership hierarchies of both civilian government and military bureaucracies, are analogically authoritarian, although as they do not maintain political sovereignty, they are not usually theorized as such directly.¹⁸ One can and should readily admit that there may be normative reasons why authoritarianism is and should not be a preferred form of governance. However, for the purposes of clear analysis it is impossible to avoid thinking conceptually about this potential future reality. And as long-term space settlements will occupy a hybrid area between local sovereignty and external control, integrating polity-regime perspectives with existing organizational approaches is warranted. There are three primary reasons for the uncomfortable but reasonable assumption of taking authoritarian models of governance seriously as humanity contemplates space settlement issues.

First, permanent settlement populations in terrestrial orbit, on the Moon, on Mars, or on nearby asteroids, will be necessarily organized hierarchically from the start as a crewed mission.¹⁹ Taking organizational cues from military, aviation, and extreme-environment exploratory missions, permanent settlements will likely already be endowed with a hierarchy of decision-making officers that will be embedded into a given localized governing structure for any meaningful space-based lifetime beyond Earth—especially during the slow construction and full establishment of any sort of permanent colonial base.²⁰ Such organizational forms—if expanded out to the size of a (very small) political community numbering in the tens and hundreds—would indeed have a *de facto* political order substantively similar to a terrestrial authoritarian regime, in which ultimate political authority would rest on apex leadership figures chosen exogenously based on the initial mission organization, rather than on bottom-up legitimating structures common to contemporary Western democratic polities.

Importantly, such mission-formatted organizational forms are a standard part of most government-sponsored exploration patterns, which rely on highly trained mission crew hierarchically organized and ultimately responsible to mission decision-makers embedded in executive bureaucratic structures in the sender state. Thus, it is unlikely that in a world where governments maintain control of future, medium-term space settlement activities, rather than corporations, they would impose alternative organizational patterns simply because they may have more democratic political regimes at home. Neither U.S. military bases nor U.S. crewed exploratory missions exhibit democratic governance structures, nor are they expected to. It is true that the existing OST stipulates that signatory nations authorize and supervise their nation's space activities, including private sector ones. Yet, that is no reason to assume that a government-monitored settlement (either corporate or government-run) would automatically mirror the home state's governance structure.

Second, should a permanent version of the mission format be considered (by a sponsoring corporation, by inhabitants, by public relations offices, by funding governments or intergovernmental organizations) to be an unacceptable medium-term organizational structure for whatever reason, the nature of corporate leadership in designing and undertaking significant settlement projects will still trend toward *de facto* and *de jure* authoritarian models.²¹ After all, corporations themselves are hierarchically structured around a top-tier, decision-making C-suite of officials, chosen by an oversight cabal or oligarchy (a board of directors, regents, or trustees) made of the most prominent share-holding elites supporting the venture.²² While corporations are not polities in the modern era, corporate-style governance functions if extrapolated to permanent human settlements would indeed be classified as authoritarian. While corporate structures vary and may indeed have oversight and elective mechanisms embedded within their hierarchical schema, these accord with classical oligarchic patterns (of a

more open variety, such as through the regulated board representation of workers) rather than national electoral democracies with fluid, competing political parties as understood in the twentieth and twenty-first centuries.²³

Importantly, a corporation on Earth, while in the ways suggested above is in some ways analogically similar to authoritarian ruling hierarchies, is also bound to national regulations with neither a claim to a monopoly on the use of legitimate violence nor a significant, sovereign physical territory—the key elements of political sovereignty or subsidiary sovereignty that is the critical distinction between political and merely organizational order.²⁴ On the Moon or Mars, however, the organizational characteristics of corporate structures, which are naturally authoritarian, would look far closer to full states, as decision-making cannot be fully exported to terrestrial patrons. In this sense, space settlement futures likely involve governance forms closer to the British or Dutch East India Companies, both of which could be plausibly characterized as authoritarian pseudo-polities (albeit with less clear “stateness” in full), and without the complications that arose in the seventeenth and eighteenth centuries from dealing with previously existing political entities in the new territories.²⁵ In these historical examples, private entities with their own internal hierarchies of authority governed physical territory directly and exercised a monopoly over the use of (state-like) social coercion and decision-making, although chartered by sending state governments and ultimately responsible to their oversight at a distance.

Historical analogies only go so far, of course, given the far faster communication infrastructure available in the modern era that would exist between space settlements and an Earth-based sponsor. Yet, the costs of policing terrestrial legal regimes in colonial ventures will remain prohibitively expensive and bound by the hard limits of materiel availability and jeopardizing settlement viability through antagonism and the extremely high societal costs of detention in such a small polity. To that end, as this article will show from an institutional perspective, authoritarian solutions will not only be attractive at the settlement level but will also find merit for sponsoring entities as well.²⁶

And third, a final answer for taking authoritarian forms of governance seriously in the case of long-term space settlement can be found using the simple framework of collective action pioneered by Alfred O. Hirschman, regularly used in political economy and organizational studies research, which suggests that any given action-set for a group of people in a bounded society can be divided into categories of loyalty, voice, or exit when presented with collective governance problems.²⁷ Simply put, there is no exit in space, at least not for permanent settlement structures in the medium term, without considerable technical breakthroughs largely relegated to the more distant future.²⁸ And voice, which can be understood as the ability to express disagreement, dissent, and critique in an organizational setting, will run up against concerns for unity, mission focus, and deference to decision-making in a hostile environment.

Given this, the option set is reduced to remaining loyal to a given organiza-

tional structure or opting for a costly voice option that may engender hostility and recrimination in a closed environment (and either genuinely endanger or lead to obvious perceptions of endangerment and threat) which in turn simply lends itself to disincentivizing options for voice in the first place. In a series of wide-ranging anthologies edited by Charles S. Cockell in the mid-2010s, despite being partly informed by classical liberal and libertarian philosophical traditions (among others), hard constraints and limits on freedom, liberty, and autonomy were nevertheless highlighted as key and sustained characteristics of space settlements across a variety of domains and dimensions.²⁹ As Cockell states plainly, conditions in such locations are “instantaneously lethal,” rendering the cost of dissent spiraling out of control as potentially being an existential threat to both the individual and the wider settlement society.³⁰

In this same vein, democratic governance forms—which are designed to bring forward sincerely held disagreements into a competitive and vibrant public sphere—are likely suboptimal solutions for the precarious nature of a first-, second-, and third-generation set of colonial settlement ventures beyond Earth. Competitive pluralism amplifies voice as a primary means of both political form and social order, and is central to strengthening the overall legitimacy of the society and its leadership. This may prove especially difficult in extreme environments with considerable technical challenges and pressures to maintain internal harmony. As exit changes from impossible to merely hard or difficult, these pressures may abate somewhat, but they are likely to remain high given the unchangeable environmental conditions of outer space.

Initial permanent human settlements will be pioneered by exploratory and colonial missions organized in hierarchical fashion for functional purposes. Further, they will likely interact with existing nondemocratic corporate governance structures and may even be directed by them. Finally, they will have strong incentives to limit political-social pluralism based on the settlers’ voice due to the lack of exit for operational reasons. Consequently, policymakers are likely to find themselves with some variation on de facto authoritarian governance models for any successful permanent space settlements in the medium term. Of course, as authoritarianism is a capacious concept that describes the organizational and institutional features of political order at a high level of abstraction, this is merely the beginning of the question rather than its end.

Insights into Extraterrestrial Governance Patterns

Given that humanity should plan for the possibility of authoritarian rule in any space venture of a nontemporary nature, what are some outcomes? Speculation about the nature of governance in permanent human settlements beyond the Earth is an old staple of science fiction narratives, which have traditionally been productive inspiration for subsequent scholarship.³¹ These speculative fiction narratives, indeed, often assume a dystopian (or utopian) form of autocracy as being particularly likely beyond terrestrial confines. Putting aside full, fictional star-faring empires such as those in *Dune*, *Star Trek*, or *Star Wars*, intra-

solar governance has often been portrayed as fundamentally authoritarian.³² These fictional worlds are, admittedly, mostly quite far removed from the initial expected experience for future human settlement—which will involve much smaller populations that are much closer to our terrestrial home. Yet even so, authors have been quite consistent in their assumptions that governance in beyond-Earth settlements will hardly be strongholds of developed democracy in the contemporary mode.

A point of particular interest is that popular fictional speculations that remain marginally closer to actual twenty-first century medium-term settlement plans have often also relied on a private-sector angle, from the despotic corporation running Martian colonies in Philip K. Dick's *Total Recall* to James S. A. Corey's *The Expanse* and its asteroid belt-wide mining conglomerates under a duumvirate between rival solar powers on Earth and Mars. Per the discussion in the previous section, it is indeed quite likely that future political rule beyond Earth will heavily rely on the translation of corporate governance practices to settled populations in growing, yet confined, territorial zones beyond the realistic remit of terrestrial governance. As the organic growth of corporate-backed space ventures in the 2010s and 2020s make clear, this is not an idle fantasy, but rather variations on a very real pattern emerging in the contemporary period.³³

The billionaire entrepreneur Elon Musk has been at the forefront of more esoteric and controversial ideas about twenty-first century governance.³⁴ In 2020, for example, he claimed that government itself was simply the “ultimate corporation.”³⁵ Although stated idly, this is not at all dissimilar to what the economist Mancur Olson once wrote about the state as a “stationary bandit” or political sociologist Charles Tilly referred to when terming the state rather “a protection racket.”³⁶ Similarly, the logistics empire of Jeff Bezos's Amazon has a greater than usual resemblance to core state capacities that penetrate disparate territories and check bureaucratic (read: Amazon employee) autonomy significantly. Given the outsized impact of these oligarchic figures on the emerging private space ecology, it is notable that the more state-like features of behemoth private enterprises run by Musk and Bezos are regularly cited as evidence of their growing political and economic power by concerned observers already.³⁷ It is likely that they, and their broader legacies of burgeoning private space development, will strongly contour the nature of extraterrestrial space governance—perhaps only second to the mission-based nature of initial, small-scale settlement ventures.

Indeed, although initial colonial efforts on the Moon and Mars will likely resemble military/space aviation mission structures (in the same way that nonpermanent space ventures have all done so for the last 50 years), once populations are large enough to no longer fit within standard mission crew organizational schemas, questions of local political authority will inevitably rise. Given the permanence of settlement, a mission structure that functions even for large groups of people for short periods of time—such as a U.S. Navy Carrier Strike

Group—will face pressures given dynamics of family formation, the renewal and sustainment of leadership legitimacy, the development of new generational cadres from within the society (or their integration from without), and so on. Similarly, it is very likely that corporate oligarchs organizing such ventures will require compacts and charters from future space-based populations to anchor and structure their internal workings, akin to the colonial charters written by the Puritans or the various commercial endeavors that ultimately settled much of British North America.³⁸ This will likely encode an authoritarian political structure chosen from the set of interests that corporate owners deem most critical for a successful long-term settlement venture, such as economic efficiency and responsiveness, workforce productivity and health, and intracolony social stability and order.

Even so, as governance moves from mission-based colonial teams to lunar and Martian settler-colonists proper, it is unlikely that preimagined corporate documents and paper charters will long survive—after all, political rule is fundamentally different from corporate governance and will furthermore be in locations blocked from easy access should crises or power disputes arise. To that end, it is expected that while there will undoubtedly be a significant endowment of structures derived from mission-oriented and corporate organization, local context will trend over time toward a mixture of *sui generis* governance developments and existing structures imposed exogenously by initial mission criteria and state or corporate sponsor goals.³⁹ That sponsors will have a strong interest in ensuring their human capital and financial investments are safe will also lead to other outside pressures that will additionally shape settlement governance.

Modeling Authoritarian Institutional Forms beyond Earth

What are the likely forms of political authoritarianism in a constrained territory beyond Earth? This article provides three brief illustrative vignettes suggesting distinct modeling frameworks for extraterrestrial authoritarian governance, intentionally taking cues not from technofuturist musings, but rather from a background synthesis of the social science literature on authoritarian regimes themselves as well as overlaps with common arguments found in organizational studies.⁴⁰ This approach has the benefit of relying on case sets from contemporary and earlier eras of human social and political organization, rather than unconfirmed propositions crafted with an eye to a hazarded effectiveness or efficiency in an extraterrestrial environment.⁴¹ That is, this article uses empirical data—which in turn has driven and informed medium-range theory on political regimes—to then extrapolate to the unique conditions of space settlement, with the particular characteristics noted in the above sections. This is still, of course, an exercise in speculative proposition, but one that remains at least properly tethered to empirical human societies. And undoubtedly the unique nature of exitless and voice-constrained space settlement will powerfully complicate any such speculation regardless.

To this end, this section will make three relevant restriction conditions here. First, that the population of the hypothetical settlements we are speaking of are too large to remain as traditional mission crews and are intended as long-term societies with a minimal expected chance for return to Earth. These large settlement populations will number in the tens, and eventually hundreds of members. Second, that long-term political governance will require on-location decision-making and social organization that cannot rely on a model of franchised rule-from-Earth in any real capacity. This latter condition would be—and has been—perfectly acceptable under mission-based criteria, but untenable for longer stretches as any given colonial society will require far quicker and more direct lines of authority and decision-making.⁴² Third, that space settlement ventures in the medium term will be limited to major nation-state powers (the United States, China, India, Russia, etc.), supranational (EU), or oligarchic-corporate (Musk-SpaceX, Bezos-Blue Origin, etc.) entities that prepare, invest, and execute such permanent missions for prestige, research, or economic exploitation reasons. Alternative motivations, which would include ventures due to emigration pressures or ideological settlement projects, require technological advancements and greater accessibility than plausible for a medium-term temporal band.

Given these conditional assumptions, this article proposes here that a functionally militarized organization, an exclusive oligarchic decision-making cadre, or a more permissive vocational-corporatist structure are likely to be among the more plausible models of authoritarian rule in beyond Earth societies over the medium-term future. These are of course not the only options, and mixed forms among these three ideal-typical presentations are likely. Yet, they should provide a guide as policymakers seriously consider the realities of space settlement beyond Earth.

Militarized Authoritarianism

One potential outcome of the ubiquitous use of contemporary space mission structures largely taking their organizational forms from military and other command-oriented setups is that this structure will be replicated later on as the model form of space-based settlement governance. That is, the societal model of a permanent settlement would mimic the strict hierarchy of mission-organizational forms, with clear separations across functional roles and singular lines of ultimate authority with no institutionalized place for voice beyond the sponsoring entity. In this sense, the problem of transition from a crew hierarchy to a broader population-wide hierarchy would be eased by simply incorporating most of the settlers' professions and roles into that same crew structure, with decision-making authorities clustered just as they were in a mission-style format.⁴³

Thus, one might find a functionally militarized settlement regime—that is, a political order in which the strict organizational hierarchies look more like military organization than anything else, even if there is no actual military

Table 1. Plausible authoritarian governance patterns in long-term space settlements

Style of authoritarian governance	Organizing principle	Emergent conditions	Implications for settlement planning
Militarized authoritarianism	Mission hierarchy, strict crew/position role	Path dependence from mission-based hierarchical structures	Planners must ensure mechanisms for leadership succession/turnover
Exclusive oligarchy	Closed but semiflat council body of decision-making officers	Assertion of corporate-style governance patterns by sponsoring entity	Planners must make clear the boundary between those with and without governance authority
Vocational corporatism	Self-regulated groups in formal hierarchy of function, with institutionalized means of ensuring deliberation	Pressures of representation and voice demands within high-status, democracy-acculturated settlement populations	Planners must think explicitly about how the settlement is legitimated through popular input, and how to ensure such input is constructive

Source: courtesy of author, adapted by MCUP.

in the colonial venture. This sort of model is in certain ways akin to Frederick the Great's "army with a state," the de facto governance situation on some of the largest forward-deployed U.S. military bases, or the permanently mobilized and stratified populations of interwar-era totalitarian or "movement-regimes."⁴⁴ These latter polities, which integrated high state involvement in society with strong ideological content, did so through mechanisms that encoded organizational hierarchies onto all levels of society.⁴⁵ Critically, the model prioritizes top-down obedience to authority, decision-making is highly concentrated at the apex of the regime, and there is an explicit social hierarchy with formalized delimitations and echelons.⁴⁶

This model of authoritarian political order would not be a military junta proper, insofar as the settlement did not derive from an actual uniformed military taken from the extraterrestrial society that launched it, but would indeed solve questions of voice by simply fitting all, or almost all, society members into a strict, top-down organizational network.⁴⁷ Decision-making would be limited to a core cadre of officer-class leadership, and all other roles would fit within a pyramidal, subordinate organizational complex.⁴⁸ Although policing power is an asymmetric force for the maintenance of political order in any society, the militarized model would likely rely even more heavily on a scrutinizing and coercive apparatus to bolster decision-making legitimacy. This sort of organizational form, of course, may find difficulty once populations reach a size where professional duty or role is no longer a full heuristic with which to categorize all individual settler-colonists.

Furthermore, dependent on relations between terrestrial sponsors and extraterrestrial settlements, leadership succession may become difficult if the upper hierarchy is expected to defer to Earth-based superiors and also be regularly rotated separate from lower-level settlers, who may be in space permanently. Thus, a form of militarized political order in long-term space settlement becomes less likely to be a stable political equilibrium over time, and especially as the mission becomes more societal sustainment rather than taking direction from the sponsor-principal. One way in which this could be solved would be through ersatz party-hierarchical models, sometimes found in militarized revolutionary groups that successfully seize power, where a rigid structure of organizational cells permeates the settlement society, organized by officers arranged in a clear chain of command upward. Examples might include China post-Mao Zedong or revolutionary postcolonial movements such as in Zimbabwe (where military officers were given privileged power). In these instances, however, the second model below may be a more appropriate conceptual approach as the settlement matures.

Exclusive Oligarchy

Another form that authoritarian governance in potential space-based, permanent settlements might take is as an explicit, decision-making oligarchy.⁴⁹ Dispensing with either the complication of organizing all of settlement society through a militarized hierarchical form or even acknowledging a supposed right of political participation for settlers, it may be the case that rule is explicitly cordoned off from the larger settlement population and comes to reside explicitly in the person of a few key officers of the colony organized collectively rather than answering to a single apex figure, as in military organizations. This would have the practical effect of creating an exclusive, oligarchic form of governance akin to restricted republics such as historical Venice or small medieval city-states, as well as more modern party-states with active and relevant party apparatus.⁵⁰ This also would look closer to trade company models from the early modern period, which entrusted governance to a small core of corporate and state-adjacent figures to manage the settlement, otherwise disconnected from the broader population.

How the decision-making and decision-confirming set of *de facto* oligarchs would be acknowledged as such would depend on the nature of the venture—this model would most easily fit within a corporate governance structure, although the oligarchs would have to be space-based. Thus, we would not be talking about shareholders or C-suite figures, but rather what we would conceptually understand as the actual oligarchy on-base. Indeed, what we would term oligarchs in an abstract sense would be reframed as the central stakeholders or permanent, officer-like positions in the settlement entity. Colonial governors and administrators in a variety of historical European empires, especially those governing far outlying territories, fit this archetype well.

This form of an oligarchic corpus of high officers within the colonial society

could also be derived from a variety of positions internal to the settlement (such as those charged with localized decision-making authority in fields such as plant maintenance, population support, and research capacities), or externally imposed and chosen by a corporate venture-sponsor from Earth. The membership of existing oligarchies (historically or today) has tended to be based in a form of substantive power contextual to the given society—wealth, blood, economic leadership, and so on—and so it will likely be that any oligarchic group will undergo membership changes as the space colonial venture evolves and matures over time. Again, historical analogies are useful, if only partial illustrations of this dynamic—with the closest fit deriving from the experience of merchant republics or mercantile-oligarchic free cities of the European late Middle Ages and Renaissance as well as trade companies and colonial governorships.⁵¹

In most oligarchic authoritarian regimes, hierarchy may be more or less diffuse and more or less formalized but will maintain some sort of institutionalized council or assembly body to coordinate the key political elites of the polity. In a space settlement under this model, rather than strict roles assigned to leaders in a single pyramid of social order, as in the militarization format, consensus or majoritarian decision-making within the institutional confines of such a ruling council would be more likely—at least in accordance with the empirical evidence in existing and preexisting human societies.

Here, there is no apex succession to manage outside of factional or personality disputes within the oligarchic body. This creates a semiclosed elite that is more likely to be self-perpetuating. However, this depends on the means of support for those at the heights of decision-making authority, which would be initially inorganic given the nature of the settlement. Furthermore, how this oligarchy would come to be established in the first place would contour its full features. One option here would be through the direct assertion of corporation-like structures (such as a board of directors, stakeholder voting mechanisms, and so on), which may indeed be a possible option given the potential private-entity sponsorship of any such settlement venture.

Vocational Corporatism

Finally, it is possible that long-term colonial societies will be unable to resist some form of popular—that is, whole population—input into its localized governance proper. This will be a consistent tension, given that democratic societies and elite, high-education/high-wealth backgrounds will likely supply much of any space-settlement's population in the medium term. Not only will likely populations be used to living in societies outwardly justified through elections, but they will be privileged specialists that will expect a degree of voice in the broader society given their high status within their own communities on Earth.

To that end, and keeping in mind the strong restrictions on actual voice and the lack of exit options, practical authoritarian rule may take the form of a population-encompassing structure of vocational corporatism.⁵² Pioneered in the early twentieth century by authoritarian and democratic governments

alike, this would involve the division of a given colonial society into constituent groups based on their professional or social role in the polity—akin to mandatory, exclusive unions today or guild structures in the past. These groups would self-regulate as much as possible and send representatives to a plenary chamber or executive cadre to negotiate and provide a form of voice, if not decision-making authority proper. Indeed, the relatively high labor power of individuals in the political economy of a permanent space settlement would plausibly incline it toward the institutionalization of voice in this manner, not dissimilar analogically to a sort of guild system. Where labor is skilled and people are scarce, incentives for bargaining increase as well, which in the conditions of outer space may very well be contoured toward institutionalized and regulated channels as much as possible.

Corporatism, and its historical predecessor of strong guilds in sovereign chartered town and cities in the European medieval period, may again be a particularly natural structure of rule in the small, confined territorial and social space of extraterrestrial colonial ventures. While historical analogies to the Middle Ages are perhaps unexpected in application to the domain of space settlement, Anthony Kennedy has written of potential feudal orders being natural elements in the speculative political economy of outer space.⁵³

For our purposes related to the question of political regime proper, the provision of voice opportunities as expressed through a vocational chamber, while also gaining the benefit of hierarchy and regularized organization, may indeed square the circle of a “small d” democratic culture in the settler population under the requirements of an overall authoritarian political order. Not only do these have real, empirical models found in European and Latin American corporatist experiences, but also variations along the lines of the consultative councils that gather together key societal elites often used by Arab monarchies as well.⁵⁴ The reality of having to face the likelihood of authoritarian rule as a necessary condition of avoiding the suicide of social breakdown in a society one cannot leave nor justifiably undermine in core, decision-making competencies is a difficult one. For these reasons, such structures may be attractive as an intentional and institutionalized effort to mitigate discontent.

All of the models presented here make assumptions that due to exit impossibilities and harsh sociological constraints on voice, authoritarian governance of one form or another is most likely for small- to medium-size space settlement ventures in the medium term. Yet, should more optimistic accounts come to pass and space settlement becomes technically and financially feasible for more than just nation-states or supranational entities with scientific and prestige goals, or corporate entities with economic goals, the authoritarian criteria may be relaxed due to the possibility of more ideologically driven ventures.

That is, should space settlement look less like a mission-focused, research, prestige, or extractive enterprises, but rather a means of terrestrial emigration or ideological self-expression in the long term, then a wider set of governance models is certainly plausible. Indeed, for those seeking beyond Earth settlement

due to religious, ethnic, or ideological purposes, or for fleeing disasters such as wars, climate change, or other cataclysmic events, democracy (or relatively unusual forms of authoritarianism such as theocracy or ideological party-states) may indeed be alternative plausible models for extraterrestrial colonial ventures.⁵⁵ Yet these too, in time, will discover similar pressures due to exit absence and voice difficulties—which will render the theoretical framework developed in this article nevertheless quite applicable to such alternatives.

Concluding Discussion

Although this article has stayed in the realm of the speculative throughout, it is certainly the case that genuine recommendations follow for planners and policymakers alike as the future of beyond Earth human settlement looms closer. Taking a less naïve, even cynical view of the likely realities of colonial governance over the medium term is a useful antidote to the obscuring clouds of utopian planning and unreasonable expectations. To that end, there are three relevant policy-oriented takeaways from this exercise that will apply to both government and corporate analysts working on extraterrestrial projects.

First, the discussion foregrounds the importance of thinking through how the organizational forms of a given initial, crewed mission may replicate themselves down the years through the weight of path dependence and the particular legibility of hierarchical patterns of authority and command. Although this is an obvious downstream effect of priming a *tabula rasa* settlement with a particular organizational structure, it may be mistakenly described as an unintended consequence by planners. Settlement planners must already take such processes into account, especially if corporate or government sponsors intend on forcing a shift from a tight, militarized hierarchical structure. This advice applies as well for more purely corporate ventures, which may be surprised when certain organizational forms become quite sticky and resistant to restructuring when placed in the context of an entire society rather than a workplace.

Second, the examples above remind us not to assume that terrestrial forms of societal governance favored by advanced democracies can be replicated in extraterrestrial contexts. Indeed, the dissonance between Earth-based politics and space-based microsocieties may be quite difficult to overcome, and possibly the source of considerable concern and consternation by planners and public relations departments at home, among others. Recognizing this inherent tension from the beginning is important, if only to develop mitigating strategies both for assuaging concerns among potential beyond Earth settlers as well as messaging for audiences elsewhere. Settlement missions focused on resource extraction, research missions, or even prestige colonies will also likely interact with structural choices that will impact the resultant form of authoritarian governance over time. Setting expectations early and clarifying the important differences between social life on Earth and in space will ease the jarring reality of a new kind of human venture into the unknown.

Finally, the vignette illustrations of plausible organizational patterns should

allow for planners to read more broadly into historical examples as well as scholarship on comparative authoritarianism for insights into how political authority, decision-making, societal legitimacy, and advise-and-consent dynamics function outside of party-based electoral democracies—which is a form of government simply unsuitable to space-based endeavors. From the above potential models, an oligarchic form of rule seems most plausible for medium-term ventures, especially given the corporate patterns that may very well set the initial organizational endowment. While planners, at a normative level, should think of how considerations of voice and quasidemocratic procedures may play a role in beyond Earth governance, it is far better to survey the full range of human social patterns than assume that all shall simply work out for the best.

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